

## 4VTZ - Project

Document content

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Content  
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## 1 CONTEXT

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Your IT Service company offer many traditional services to their customers with projects like messaging, collaboration, deployment... But some customers are asking for a new kind of service. They do not want to buy and manage physical servers anymore.

So your company decided to build its own IaaS (*Infrastructure as a Service*) Cloud to meet the needs of its customers.

Your team is in charge to build the architecture of the new offer: Cloudis

## 2 PROJECT

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### 2.1 ARCHITECTURE (8 POINTS)

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You have to create a highly available virtualization architecture.

Your architecture must contain at least:

- 3 ESXi hosts
- 1 cluster with fully automated DRS
- 1 Active Directory with domain name: cloudisYOUR-ID.lan
- 1 iSCSI datastore to store all virtual machines
- 1 backup storage

You must follow network best practices and configure the following networks:

- 1 public VM network (2 load balanced cards)
- 1 vMotion network (2 load balanced cards)
- 1 Storage network with multi-pathing.

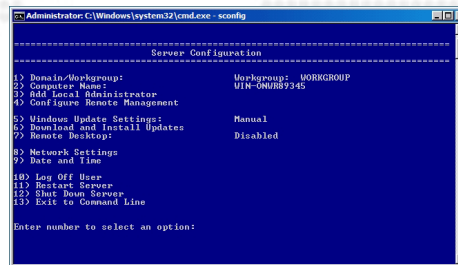
### 2.2 IAAS IMPLEMENTATION (7 POINTS)

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As said before you are in charge to create a IaaS infrastructure for your clients.

Your infrastructure is now ready to welcome the VM of your customers in a highly available environment but you still have to automatize the processes linked to VM management.

The main purpose of the IaaS is to provide Virtual Machine as a Self Service to customers.



To do that you will have to create one PowerShell script that will look like “sconfig” and respect the following requirements:

- Choice 1: See VM status for one client. Select client and show the following information about the chosen VM:
  - o VM Name
  - o IP
  - o Status: On/Off
  - o Last Backup Date
- Choice 2: Delete a chosen virtual machine
- Choice 3: Restart a chosen virtual machine
- Choice 4: Add a new virtual Machine for a selected client
  - o Name
  - o IP if needed
  - o VM Template to use

When the first VM for a given customer is created, a VSphere folder is created with the customer name. The VM is placed in this folder. You don't have to specify an IP address because the first VM only will be connected to the public network and must have a DHCP IP.

If it's the second VM, you have to set the internal IP address of the first and the second VM. A dedicated network will be created to allow all client's VM to communicate with each other.

All clients' VMs, networks... must be created automatically and VMs must be automatically distributed on available hosts. An additional security setting must be configured on the client folder. The client has to be able to manage their Virtual Machines from a vSphere (web) console but he can't manage the others.

At the end of the process of VM creation, the customer will be able to login to the virtual machine with Remote Desktop.

Note: See the following link for help:

<https://www.vmware.com/support/developer/windowstoolkit/wintk40u1/html/>

## 2.3 BACKUP (2 POINTS)

You have only one datastore to store all customers VMs. So you must find a solution that backup all VMs every day in another store. You must inform the client that his VM is backed up.

### 2.4 BONUS (3 POINTS)

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Based on the script created part 2.2, you create an interface (Web or PowerShell) that can be used directly by the customer.

Customers must be able to login with their Active Directory accounts on the interface.

Note: This part can be realized only if part 2.2 is done.

This interface will ensure few features:

- See the list of customer VMs with the following information:
  - Name
  - IP
  - Status: On/Off
  - Last Backup date
  - Actions: Delete/Restart
- Add a new VM. The customer has to provide the following information:
  - Name
  - IP if needed

## 3 DELIVERY

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This project can be realized by group of 4 students maximum. A penalty of 5 points will be applied for each additional student.

No documents have to be sent to your teacher before the presentation deadline.

Notation will be based on the presentation that will illustrate your work. The presentation must be made in 20 minutes. Please reserve a couple of minutes for questions. Your presentation must be professional and well prepared.

During the presentation, it is mandatory your architecture is functional. You will be evaluated on a running architecture only.

No Screenshots or videos can be considered as a proof.

### 3.1 POINTS DISTRIBUTION

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During your presentation you will be evaluated on the following points:

- Architecture: 8 points. 1 point by each statement:
  - ESXi hosts
  - Cluster and DRS
  - Active Directory
  - iSCSI datastore
  - Backup storage

- Public VM network
  - VMotion network
  - Storage network
- IaaS implementation (7 points):
  - Login AD (1 point)
  - List of client's VM (1 point)
  - Delete/Restart VM (1 points)
  - Add VM (2 points)
  - Add dedicated network (1 point)
  - Set security (1 point)
- Oral presentation quality (2 points)
- Bonus (up to 3 points)